

**WORLDWIDE EMERGING ENVIRONMENTAL ISSUES AFFECTING THE U.S. MILITARY**  
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Environmental Policy Institute

**APRIL 2006 REPORT**

Note to Readers: Pages 1-11 comprise the summary and analysis of this report. Expanded details for some items that might not be available via the Internet at a later date are in the Appendix beginning on page 12.

<b>Item 1. China's President Hu Ordered Environmental Regulations for Military Activities.....</b>	<b>1</b>
<b>Item 2. Two Global Alliances for "Greener" Buildings Around the World.....</b>	<b>1</b>
<b>Item 3. Indian Military Upgrades its Counter-WMD Strategies.....</b>	<b>2</b>
<b>Item 4. Technological Breakthroughs with Environmental Security Implications.....</b>	<b>2</b>
4.1 Sugar-Coated Gold Nanoparticles Detect Toxins.....	2
4.2 Fast Bacteria Detection from Bacteriophage/Quantum Dot Complexes.....	2
4.3 Anti-anthrax Protein Found.....	3
4.4 Genetically Engineered Virus May Improve Future Batteries.....	3
4.5 Computer Simulation Planned to Predict Where Epidemics Will Strike Next.....	4
<b>Item 5. Updates on Previously Identified Issues.....</b>	<b>4</b>
5.1 PrepCom to Set Agenda for the BWC Review Conference.....	4
5.2 Climate change.....	5
5.2.1 Research Documents Continued Global Warming Effects.....	5
5.2.2 UK Calls for Worldwide Action for Addressing Global Warming.....	5
5.2.3 East Asia and Climate Change.....	5
5.2.4 Rising Sea Level Triggers Rising Refugee Move.....	6
5.3 Northwest Passage to Become "Canadian Internal Waters".....	6
5.4 New UK Chemical Data Base for Regulatory Compliance.....	7
5.5 Stockholm Convention Meeting to Look at Concrete Actions and Policies.....	7
5.6 Study Says Mobile Phones Raise Tumor Risk.....	8
5.7 Space Technology for Improving Planetary Knowledge and Security.....	8
5.8 ANSI to Carry Out Survey on Needs for Nanotech Standards.....	9
<b>Item 6. Reports Suggested for Review.....</b>	<b>10</b>
6.1 Assessment of Toxicity Testing for Environmental Agents.....	10
6.2 UK Analysis of Current Green Energy Options.....	10
6.3 Mediterranean Threatened by Development Pressures, Says Blue Plan Report.....	11
<b>Appendix.....</b>	<b>12</b>

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**Item 1. China's President Hu Ordered Environmental Regulations for Military Activities**

The People's Liberation Army of China has been directed by President Hu Jintao to submit its construction and training plans, as well as materiel transfer, weapon purchases, repair, and disposal to local authorities for approval regarding environmental impacts. The President also issued new regulations that specify assessment procedures and penalties for infractions. Construction of military bases, ports, logistics centers and exercise fields is to be approved only after the project passes environmental evaluation, including approval by local environment authorities.

**Military Implications:**

Military liaisons in China and personnel with experience in the environmental impact of military activities should confer to identify opportunities for sharing and learning best practices for lowering military impact on the environment.

**Source:**

China moves to curb military pollution

[http://news3.xinhuanet.com/english/2006-03/18/content\\_4314926.htm](http://news3.xinhuanet.com/english/2006-03/18/content_4314926.htm) (Article stored for a limited time; full text in the [Appendix](#))

**Item 2. Two Global Alliances for "Greener" Buildings Around the World**

The UN Environment Programme (UNEP) and major companies worldwide in the construction industry launched the Sustainable Building and Construction Initiative (SBCI), whose purpose is to promote environment-friendly practices throughout the industry. According to Monique Barbut, director of UNEP's Division of Technology, Industry and Economics (DTIE), which hosts the SBCI secretariat, the project's objectives include the worldwide adoption of sustainable building and construction practices that can help deal with problems like climate change, waste disposal, and depletion of natural resources; the development of pilot projects that embody its recommendations; and the inclusion of sustainability considerations in legislation and building standards. Another alliance initiated by the World Business Council for Sustainable Development (WBCSD) of such companies as United Technology and Lafarge Group is promoting construction standards that would make new buildings energy self-sufficient (no dependency on external power grids) and carbon-neutral. Their initial focus is on new buildings in China, India, Brazil, the United States and the EU.

**Military Implications:**

The military should liaise with both SBCI and WBCSD to share and learn best design and construction practices for improved environment-friendly built environments. This is another opportunity to further the *Army Strategy on the Environment*.

**Sources:**

U.N. Environment Program Launches Green Building Initiative

[http://www.greenbiz.com/news/news\\_third.cfm?NewsID=30459](http://www.greenbiz.com/news/news_third.cfm?NewsID=30459)

Buildings of the Future Energy Self-Sufficient, Carbon Neutral

<http://www.ens-newswire.com/ens/mar2006/2006-03-29-03.asp>

### **Item 3. Indian Military Upgrades its Counter-WMD Strategies**

The Indian Union Home Ministry and the Health Ministry are to prepare “standard operational procedures to deal with terror attacks using biological weapons.” Indian military chiefs and senior military scientists held a week-long conference to examine their troops’ preparedness in the eventuality of conflicts involving nuclear, biological, or chemical (NBC) weapons. The meeting discussed progress in protective technologies (such as anti-radiation clothing and tanks, and armored carriers resistant to WMD attacks). Last month, an Indian paramilitary unit tasked with protecting key installations announced that it would organize two specially trained anti-WMD battalions by the end of 2006.

#### **Military Implications:**

The military should explore the possibility of evaluating India’s counter-WMD procedures to see if more environmentally friendly options are available.

#### **Sources:**

Indian military ready to fight all out nuclear, chemical and biological warfare

<http://www.indiadaily.com/editorial/8048.asp>

Indian military kicks off nuclear warfare conference

[http://news.yahoo.com/s/afp/20060417/wl\\_sthasia\\_afp/indiamilitarynuclear\\_060417114817](http://news.yahoo.com/s/afp/20060417/wl_sthasia_afp/indiamilitarynuclear_060417114817)

Plan to deal with germ warfare by terrorists

<http://www.newindpress.com/NewsItems.asp?ID=IEH20060427131917&Page=H&Title=Top+Stories&Topic=0>

### **Item 4. Technological Breakthroughs with Environmental Security Implications**

#### **4.1 Sugar-Coated Gold Nanoparticles Detect Toxins**

Researchers at the UK's University of East Anglia have developed a new method for detecting toxins based on the use of 16-nm-sized sugar-coated particles of gold. The sugars used are tailored to be sensitive to specific substances; a solution containing the particles will change color in the presence of the target material. The scientists speculate that a portable detector using this scheme could be ready in five years.

#### **Military Implications**

Such a portable device might prove to be efficient for environmental surveillance and toxins detection. The military should consider following the development of the technique for eventual tailoring for specific uses.

#### **Source:**

Gold nanoparticles to trap toxins

<http://news.bbc.co.uk/2/hi/technology/4872188.stm>

#### **4.2 Fast Bacteria Detection from Bacteriophage/Quantum Dot Complexes**

Scientists from the National Cancer Institute (NCI) and National Institute of Standards and Technology (NIST) have developed a technique for the fast and sensitive identification of bacteria.

A selected type of bacteriophage attacks a specific bacterium and produces phage particles that bind to specially treated quantum dots (nanoscale semiconductor particles that give off stronger and more intense signals than conventional fluorescent tags). Fluorescence of the phage-dot complexes can be detected by conventional microscopy or other means. The method can use several different types of complexes simultaneously and can detect and identify up to ten target bacterial cells per milliliter of sample in about an hour.

**Military Implications**

The military should consider following this research and investigating its applicability to systems for detecting eventual traces of environmental contaminants and biological weapons.

**Source:**

Quantum Dot Method Rapidly Identifies Bacteria

<http://www.physorg.com/news62951476.html>

**4.3 Anti-anthrax Protein Found**

A lysin (specialized enzyme protein) that selectively destroys the anthrax bacterium has been identified by Vincent Fischetti, professor and co-head of the Laboratory of Bacterial Pathogenesis and Immunology at Rockefeller University. The new protein, PlyPH, which is found in a bacteriophage, has the advantage of working over a wide range of pH values and also of killing only anthrax and not any other possibly beneficial organisms. The researchers hope to combine PlyPH with another compound that causes anthrax spores to germinate, and thus become vulnerable to destruction.

**Military Implications:**

This discovery could be developed for environmental cleanup systems after a biological attack. The military should follow and encourage its evolution for speedy applicability.

**Sources:**

Newly Discovered Protein Kills Anthrax Bacteria

<http://www.emaxhealth.com/39/5607.html>

Protein Found That Explodes Anthrax Bacteria on Contact

<http://www.ens-newswire.com/ens/apr2006/2006-04-21-03.asp>

**4.4 Genetically Engineered Virus May Improve Future Batteries**

A genetically engineered virus has been used by scientists at MIT to produce the positive electrode of a lithium-ion battery. The virus proteins contain an amino acid that binds to cobalt ions in a solution, giving the proteins, after some treatment, a coating of cobalt oxide, which has much higher storage capacity than the carbon-based materials now used in lithium-ion batteries. A further improvement was obtained by adding gold as an ingredient, in addition to cobalt. This technique holds a promise for much improved battery manufacturing methods, although much development remains to be done.

**Military Implications**

The military should keep in touch with this research in order to be ready to apply it to smaller and cheaper power sources for field environmental monitoring devices.

**Source:**

Virus-Assembled Batteries

[http://www.technologyreview.com/BizTech/wtr\\_16673,296,p1.html](http://www.technologyreview.com/BizTech/wtr_16673,296,p1.html)**4.5 Computer Simulation Planned to Predict Where Epidemics Will Strike Next**

World Health Organization researchers are developing a global epidemic simulator (GES) based on the model of climate monitoring systems. GES would record the location of disease outbreaks and their trajectory and then allow one to enter alternative mitigation measures to see the results. GES would integrate epidemiological and biological models of disease, to model the world's disease status. The system would be connected to major elements of the built environments such as airlines, buildings, etc. to help spot outbreaks and the movements of people. WHO is seeking funding to complete the project.

**Military Implications:**

Such a simulator showing outbreaks and how they might spread around the world would be a great help in the struggle to contain pandemics. The military should consider options for collaboration with the WHO team. Perhaps, the technique could be adapted to management of diseases of plant and animal natural resources on military installations.

**Source:**

Simulator could predict where epidemics will strike next

From issue 2545 of New Scientist magazine, 30 March 2006, page 27

<http://www.newscientisttech.com/article/mg19025456.000.html>**Item 5. Updates on Previously Identified Issues****5.1 PrepCom to Set Agenda for the BWC Review Conference**

The Preparatory Committee for the Sixth Review Conference of the Biological Weapons Convention met in Geneva to prepare the agenda along with organizational and financial matters for the Review Conference to be held in November 2006. The Review Conference will examine the operations of the Convention since its review in 2002. It will also discuss new technological developments, and further actions necessary to strengthen the BWC (formally called the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction). Masood Khan, Pakistan's ambassador to the UN and expected president of the review conference, chaired the meeting. [See also *Recommendation for a Biosecurity Watchdog* in February 2006 and *Time to Strengthen the 1972 Biological Weapons Convention* in December 2004 environmental security reports.]

**Military Implications:**

[Similar to previous on the same issue] Without better international controls, terrorist access to biological weapons seems inevitable. Great progress has been made on bioweapons sensors over the past several years, some of which have been referenced in these monthly reports for AEPI. Relevant military personnel should consider making recommendations for the Review Conference to strengthen the BWC.

**Source:**

At UN, parties to Biological Weapons Convention plan to review effectiveness

<http://www.un.org/apps/news/story.asp?NewsID=18286&Cr=biological&Cr1=weapon>

Biological Weapons Convention Meeting To Prepare For 2006 Comprehensive Review

[http://www.unog.ch/unog/website/news\\_media.nsf/%28httpNewsByYear\\_en%29/4C9CAE0B7A909C4FC125715A002FDB60?OpenDocument](http://www.unog.ch/unog/website/news_media.nsf/%28httpNewsByYear_en%29/4C9CAE0B7A909C4FC125715A002FDB60?OpenDocument)

## **5.2 Climate change**

### **5.2.1 Research Documents Continued Global Warming Effects**

At the European Geosciences Union meeting in Vienna, several scientists revealed recent research and data on greenhouse gas emissions; global warming and its consequences; glaciers' unprecedented melting rates; and the increasing acidity of oceans and its consequences on marine life. There was consensus that human activity is an important driver and that swift action to change current trends and practices should be mandatory.

### **5.2.2 UK Calls for Worldwide Action for Addressing Global Warming**

The British government is intensifying its call for immediate worldwide consensus and action for addressing global warming, which would include the economically booming China and India, even if it would take decades to see the results. The government's chief scientist, Sir David King, warned that, even by the most optimistic forecasts, carbon dioxide levels are set to double those of the pre-industrial era, leading to a three-degree centigrade rise in temperature, jeopardizing eco-systems, raising sea levels and flooding coastal areas, and causing the hunger of 400 million people. The Blair government claims that Britain will exceed the Kyoto Protocol target of 12.5% emissions reductions by 2012, but not its own goal of 20% reduction by 2010, in spite of the plans for stricter emission regulations introduced last month.

### **5.2.3 East Asia and Climate Change**

The spotlight of the latest *East Asia Update* report by the World Bank, "Climate Change and East Asia—Challenges and Opportunities" warns that climate change is likely to significantly affect economies in the Asia-Pacific region, threatening the coastal area and jeopardizing the region's economic growth. Rising sea levels, more intense storms and greater extremes of droughts and floods will threaten the livelihoods of millions of poor and cause mass migration. Another report, *State of the Environment in Asia and the Pacific 2005* by the UN Economic and Social Commission for Asia and the Pacific (UNESCAP), is assessing the implications of the region's rapid economic growth, revealing that present patterns are unsustainable and urges adoption of "green" policies and standards. Along the same lines, experts and policy-makers attending the "Asia-Pacific Dialogue on Innovative Options for Non-Annex I Countries Participation for Climate Change Action" held in Bangkok, discussed strategies for the regions' developing countries to reduce greenhouse gas emissions in the framework of the Clean Development Mechanism (CDM). The meeting was co-organized by the Institute for Global Environmental Strategies (IGES) and UNESCAP. Little progress has been made, because many developing countries are worried that binding targets to reduce greenhouse gas emissions would jeopardize their economic growth.



#### 5.2.4 Rising Sea Level Triggers Rising Refugee Move

Further to the *Rising Concerns over Rising Seas* item of the February 2006 report on the 11,000 inhabitants of Tuvalu facing the threat of the rising ocean level: now, seeing themselves as climate refugees, some Tuvaluans are leaving their Pacific island homes and moving their communities to safer ground in New Zealand, thus officially becoming environmental refugees. [See also *Several Small Asia/Pacific Countries at Risk because of Rising Sea Levels* in January 2006, *First People Displaced Due to Rising Sea Levels* in December 2005.]

#### **Military Implications:**

[Similar to previous on the same issue] There is compelling evidence of the consequences of anthropogenic climate change, and the growing world option for action. The military should continue to accelerate their efforts to reduce its greenhouse gas emissions. New international environmental security-related policies and cooperation to avoid potentially large-scale disasters and conflicts seem inevitable.

#### **Sources:**

European Geosciences Union—Media

<http://www.egu-media.net/content/category/3/39/49/>

Top UK Scientist Sees Dangerous Rise In Global Warming

[http://www.terradaily.com/reports/Top\\_UK\\_Scientist\\_Sees\\_Dangerous\\_Rise\\_In\\_Global\\_Warming.html](http://www.terradaily.com/reports/Top_UK_Scientist_Sees_Dangerous_Rise_In_Global_Warming.html)

Earth's Ice Melting Under Blanket of Greenhouse Gases

<http://www.ens-newswire.com/ens/apr2006/2006-04-04-04.asp>

East Asia Update - News Release

<http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/EASTASIAPACIFICEXT/EXT/EAPHALFYEARLYUPDATE/0,,contentMDK:20865282~pagePK:64168445~piPK:64168309~theSitePK:550226,00.html> (see “Download the Report” for more details)

Asia-Pacific Dialogue on Innovative Options for Non-Annex 1 Countries' Participation for Climate Change Action

<http://www.iges.or.jp/en/cp/activity07.html>

Launch of the State of the Environment in Asia and the Pacific 2005 Report

<http://www.unescap.org/unis/press/2006/apr/n19.asp>

Early Signs: New Zealand's Climate Refugees

<http://www.loe.org/shows/segments.htm?programID=06-P13-00013&segmentID=6> (audio transcript)

#### **5.3 Northwest Passage to Become “Canadian Internal Waters”**

The Canadian government mounted an expedition to defend the Northwest Passage as Canadian territory. This is the largest Canadian expedition in 60 years in the Arctic, with troops traveling 2800 miles across the region that is changing rapidly as a consequence of climate change. In addition to sailing, the opening of the Northwest Passage is an opportunity for access to rich resources, including oil. Recent research suggests that the passage could become ice-free and open for navigation as soon as 2015. While Canada claims sovereignty over the region, it is at odds with other countries including Denmark and Russia who argue that the area is a continuation of their territory. [See also *Arctic Northern Passage Opens New International Issues of Regulation* in February 2006 environmental security report.]



**Military Implications:**

[Similar to previous on the same issue] It is likely that discussions for clear international regulations concerning Northwest Passage navigation will increase rapidly and more military action will be called for to ensure the safety of individuals and ecosystems. Relevant military personnel should cooperate with their counterparts in other countries and international organizations in developing adequate national and international regulations and enforcement procedures regarding the Arctic region. By exercising sovereignty, Canada could impose its own rules and regulations for the Northwest Passage, including the right to request vessels to conform to certain environmental and construction standards to avoid disasters in this fragile region.

**Sources:**

Canada troops mount big Arctic sovereignty patrol

<http://www.alertnet.org/thenews/newsdesk/N09308393.htm>

Northwest Passage gets political name change

<http://www.canada.com/edmontonjournal/news/story.html?id=6d4815ac-4fdb-4cf3-a8a6-4225a8bd08df&k=73925&p=1>

**5.4 New UK Chemical Data Base for Regulatory Compliance**

The UK's Chemical Industries Association has set up the ReachReady organization and database at [www.reachready.co.uk](http://www.reachready.co.uk) to aid organizations in complying with the EU's REACH (Registration, Evaluation and Authorization of Chemicals) regulations. [See also *Integration of Chemical Regulations (REACH) Approved by European Council* in December 2005, *The REACH Program Closer to Entry Into Force* in March 2005, and other related items in previous environmental security reports.]

**Military Implications:**

The military should investigate this new resource for its possible usefulness to components operating in the European theater and therefore subject to the REACH regulations.

**Source:**

ReachReady [www.reachready.co.uk](http://www.reachready.co.uk)

**5.5 Stockholm Convention Meeting to Look at Concrete Actions and Policies**

The Second Meeting of the Conference of the Parties to the Stockholm Convention (COP 2) on Persistent Organic Pollutants (POPs) will be held in Geneva, May 1–5. Representatives of Parties to the Convention will review progress and discuss specific activities, policies, and investments at the national and community levels that would help POPs reduction. The conference agenda includes: strengthening of a global monitoring network to track the levels of POPs in the environment; technical assistance; non-compliance; liability; and the redress of issues. Presently there are 12 POPs covered by the Convention and more chemicals are under technical review and expected to be added to the list in coming years. [See also *Stockholm Convention Updates* in November 2005 and other previous environmental security scanning reports.] Note: we will report on the COP-2 outcomes in the May environmental security scanning report.

**Military Implications**

[Similar to previous on the same issue] Although the U.S. is not Party to the Stockholm Convention, it should be prepared to comply with its requirements when acting in countries Party.

Thus, it should closely follow the COP discussions on specific actions and policies to help the Convention's implementation and enforcement. Also, in addition to the preparation for phaseout of the 12 already listed POPs, it is essential to consider the military implications of the additional newly suggested substances and initiate preparations for their replacement.

**Source:**

National Plans for Eliminating 12 Extremely Hazardous Chemicals

<http://www.unep.org/Documents/Multilingual/Default.asp?DocumentID=475&ArticleID=5263&l=en>

Second Meeting of the Conference of the Parties of the Stockholm Convention

<http://www.iisd.ca/chemical/pops/cop2>

### **5.6 Study Says Mobile Phones Raise Tumor Risk**

A study by the Swedish National Institute for Working Life has indicated that the use of mobile phones over a long period of time can raise the risk of brain tumors. The criterion for heavy use was 2000 hours or more, equivalent to ten years use at an hour a day. The work involved 2200 cancer patients and an equal number of controls. According to a Reuters dispatch, one of the scientists said that the results pointed to a 2.5× higher risk of a malignant tumor on the side of the head the phone is used. These results are at odds with earlier Dutch and British research, which found no such correlation. [See also *Cell Phones Damage Rat Brains* in February 2004 environmental security report.]

**Military Implications:**

While this question of a hazard from the use of electronic handsets is being resolved, the military (in addition to closely following the scientific efforts) should be investigating what steps would need to be taken, if the fears prove well founded, and such devices become the subject of restrictive regulations. It seems likely that this could become a major issue in the European theater, in view of the locale of the studies.

**Source:**

Long mobile phone use raises brain tumor risk

<http://go.reuters.com/newsArticle.jhtml?type=technologyNews&storyID=11714735>

Heavy Use of Mobile Phones Increases Cancer Risk, Study Finds

<http://environment.about.com/od/healthenvironment/a/cancerphones.htm> (Article stored for a limited time on the website; full text in the [Appendix](#))

### **5.7 Space Technology for Improving Planetary Knowledge and Security**

Over 8000 scientists convened in Vienna, Austria, April 3–7 for the third annual European Geosciences Union (EGU) General Assembly. The discussions through the 400 thematic sessions revealed the importance of space technology in contemporary planetary sciences. Prominent subjects included changes in CO<sub>2</sub> levels and their impact on biodiversity; the use of satellite technology in enhancing weather predictions; greater understanding of polar ice loss; deep sea research using marine mammals; the use of solar-powered robots for polar research; and satellite altimetry to predict sea level change and predict its impacts. [See the [Appendix](#) for more details on the issues discussed at the EGU General Assembly] Space technology proves to be of great help in monitoring present flooding in Europe and world population mapping, increasing timely and more efficient response. NASA's CloudSat and CALIPSO research satellites launched this month will

help scientists refine computer models that forecast the weather and chart global climate change. [See also *Satellite Technology Use for Environmental-related Issues Expands* in December 2005, *Space Technology to Help Enforce Environmental Regulations* in November and *Climate Change--Improved Satellite Climate Change Monitoring* in June 2005 and other related items on the same issue in previous environmental security reports.]

**Military Implications:**

[Same as previous on similar issues] Developing an integrating environmental monitoring capability to provide informed data to the public, and policy- and decision-makers, would considerably improve the assessment of potential environmental impacts of different actions, facilitate enforcement of international treaties worldwide, and could help mitigate environmental and social consequences induced by conflict or natural disasters. The military should consider full cooperation in all the phases—from development to implementation and use of space-based observation systems.

**Source:**

European Geosciences Union—Media

<http://www.egu-media.net/content/category/3/39/49/>

Geoinformation from space sharpens population density maps

[http://www.esa.int/esaEO/SEMZWFOFGL\\_economy\\_0.html](http://www.esa.int/esaEO/SEMZWFOFGL_economy_0.html)

Massive German floods monitored from space

[http://www.esa.int/esaEO/SEMRPVNFGLE\\_environment\\_0.html](http://www.esa.int/esaEO/SEMRPVNFGLE_environment_0.html)

NASA launches climate satellites

[http://today.reuters.com/news/articlenews.aspx?type=topNews&storyid=2006-04-28T110208Z01\\_B193600\\_RTRUKOC\\_0\\_US-SPACE-SATELLITES.xml](http://today.reuters.com/news/articlenews.aspx?type=topNews&storyid=2006-04-28T110208Z01_B193600_RTRUKOC_0_US-SPACE-SATELLITES.xml)

**5.8 ANSI to Carry Out Survey on Needs for Nanotech Standards**

The American National Standards Institute (ANSI) has announced the initiation of a survey developed by the U.S. Technical Advisory Group to ISO Technical Committee 229—Nanotechnologies. According to the ANSI announcement, "Input from the survey will help to shape the U.S. position on international standardization activities in nanotechnology. The survey asks U.S. industry stakeholders to identify market needs and areas of standardization that they believe will lead to the commercialization of nanotechnology applications. The ISO effort currently focuses on three main areas: terminology and nomenclature; metrology and instrumentation ...; and science-based health, safety and environmental practices." [See also *ISO to Establish Standardization in the Field of Nanotechnologies* in the October 2005 environmental security report.]

**Military Implications:**

Relevant military personnel should consider participating in the survey to provide input for the international standards in the field of nanotechnology.

**Sources:**

Nanotechnology Survey Launched to Assess Industry Needs

[http://www.ansi.org/news\\_publications/news\\_story.aspx?menuid=7&articleid=1202](http://www.ansi.org/news_publications/news_story.aspx?menuid=7&articleid=1202)

Email invitation –see [Appendix](#)

The survey: [www.zoomerang.com/survey.ZGI?p=WEB22598kqraad](http://www.zoomerang.com/survey.ZGI?p=WEB22598kqraad)

## **Item 6. Reports Suggested for Review**

### **6.1 Assessment of Toxicity Testing for Environmental Agents**

In view of new directives and initiatives for toxicity testing in the U.S. and Europe, and the new testing technologies and methods that are emerging, EPA called for a comprehensive review of the present testing methods and strategies and recommendations for improvement. To that effect, the National Research Council (NRC) designated a Committee on Toxicity Testing and Assessment of Environmental Agents to conduct an independent two-part study. The focus is human toxicology and not ecologic effects of environmental agents. The first part of the study, *Toxicity Testing for Assessment of Environmental Agents: Interim Report* is a comprehensive analysis of the current approaches to toxicity testing and data needs to meet regulations. The committee agrees that new strategies and protocols are needed to improve the efficiency of toxicity screening and address some of the data gaps identified. The second part, expected to be completed by fall 2006, focuses on developing long-range vision and strategy to advance the practices of toxicity testing and human health risk assessment of environmental contaminants.

#### **Military Implications:**

Relevant military personnel should consider studying the two reports for inputs in improving military practices for toxicity assessment of environmental agents, as well as to be prepared for new protocols and strategies.

#### **Source:**

*Toxicity Testing for Assessment of Environmental Agents: Interim Report* (2006)  
<http://darwin.nap.edu/books/0309100925/html>

### **6.2 UK Analysis of Current Green Energy Options**

The *Which Energy?* report by the Institute of Science in Society is an assessment of many energy options regarding accelerating global warming and depleting fossil fuels. Bringing together the science, ethics, economics, safety, and politics of available energy options, the report puts forward recommendations for cleaner energy policies and actions, including ruling out nonrenewable sources and techniques that are not environmentally friendly and/or safe for society (e.g. nuclear), and advocating energy self-sufficiency as the best guarantee for energy security. Although this report does not include such high tech items as genetically engineered photosynthesis to produce hydrogen or orbital solar power satellites for base load electricity, it is nevertheless a very good review of current alternative “green” energy solutions.

#### **Military Implications:**

The report should be studied for implications for more energy efficient and less environmentally damaging approaches to energy production and use.

#### **Source:**

Parliament Launch of ISIS 2006 Energy Report  
<http://www.i-sis.org.uk/PLOIER.php> and for the executive summary, see:  
[http://www.i-sis.org.uk/ISIS\\_energy\\_review\\_exec\\_sum.pdf](http://www.i-sis.org.uk/ISIS_energy_review_exec_sum.pdf)

**6.3 Mediterranean Threatened by Development Pressures, Says *Blue Plan Report***

*A Sustainable Future for the Mediterranean: the Blue Plan's Environment & Development Outlook*, a report by the UNEP's Mediterranean Action Plan, states that if current trends continue, the region's ecosystem will be severely jeopardized by 2025. The report suggests an alternative based on the principles of sustainable development that could boost the quality of life over the coming decades while protecting the environment. The report was commissioned by the 21 nations bordering the Mediterranean Sea and is the result of the cooperation of 300 experts.

**Military Implications:**

The outcomes of the report might find their way into new environmental regulations. The military should consult the report for eventual implications for their future activities in the region and also as a resource for eventual inputs in improving its own environmental strategies.

**Source:**

Mediterranean Threatened by Development, says Blue Plan Report

<http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=475&ArticleID=5248&l=en>

## **APPENDIX**

### **Reference Details**

This Appendix contains expanded background information on some items, and the full text for the articles that are not available on the Internet or are usually stored for a limited time on the respective Web sites.

#### **Item 1. China's President Hu Ordered Environmental Regulations for Military Activities**

China moves to curb military pollution  
www.chinaview.cn 2006-03-18 07:18:21

BEIJING, March 17 (Xinhuanet) -- The Chinese army has been ordered to seek local authorities' approval and pass environment evaluation for construction projects and military exercise plans to prevent environmental hazards.

Chinese President Hu Jintao, who is also the Chairman of the Central Military Commission, recently issued a regulation to set up an environment evaluation system to curb pollution caused by military activities.

According to the regulation, construction of military bases, ports, logistics centers and exercise fields should only be approved after the project passes environment evaluation.

The assessment should also be applied to other activities that might harm the environment, including military training, goods transfer, weapon purchases, repair and disposal, the regulation said.

All the assessments should be approved by local environment authorities, it added.

The six-chapter regulation also specified the assessment procedure, organs responsible for the assessment and the punishments for people and organizations that violate the regulation.

"The evaluation system is very important as it will effectively curb military pollution," the regulation said.

#### **Item 5. Updates on Previously Identified Issues**

##### **5.6 Study Says Mobile Phones Raise Tumor Risk**

From Larry West, Your Guide to Environmental Issues.

**First Evidence of Link Between Mobile Phone Use and Severe Brain Tumors**

Heavy users of wireless mobile phones face increased risks of developing severe brain tumors, according to the most comprehensive study ever conducted on the possible link between cancer and the long-term use of cellular telephones.

Researchers at the Swedish National Institute for Working Life and the University of Oerebro compared the mobile phone use of 4,400 people—half of them cancer patients, and the other half healthy people who made up the control group—and made some disturbing discoveries. [The U.S. Food and Drug Administration has since questioned the results of this study. For information, see [FDA Questions Results of Study Linking Mobile Phones and Cancer.](#)]

**Heavy Mobile Phone Use Increases Cancer Risk**

According to Kjell Hansson Mild, who led the study, heavy users of mobile phones have a 240 percent increased risk of developing a malignant tumor on the side of the head where they press the phone to their ear.

Published in the International Archives of Occupational and Environmental Health, the study defines “heavy use” as 2,000 hours of mobile phone use in the course of a decade, which “corresponds to 10 years’ use in the work place for one hour per day.”

Of the 2,200 cancer patients in the study, who ranged in age from 20 to 80 years old, 905 had a malignant brain tumor and just under one-tenth of that number were heavy mobile phone users.

“Of these 905 cases, 85 were so-called high users of mobile phones, that is they began early to use mobile and/or wireless telephones and used them a lot,” said the authors of the study in a statement issued by the Institute.

In addition, the study concluded that early users, defined as people who started using a mobile phone before age 20, are also at greater risk of developing a malignant brain tumor.

The study also took into account factors such as smoking habits, working history and exposure to other known cancer-causing agents.

**Limit Mobile Calls and Use Handsfree Options**

Hansson Mild advised that the best ways for consumers to lower their risk of cancer related to mobile phones are to use their wireless phones less frequently and to use handsfree options when they do make or receive mobile calls. He said the research report about the study is not intended to cause public alarm or to raise concerns about widespread risk for the majority of people who use mobile phones.

“It does however give reason to use caution when calling on wireless phones,” he said in an interview with Dow Jones. “Use handsfree and avoid wireless when possible.”

**Swedish Study Breaks New Ground**

The Swedish study is the first to show a significant link between long-term mobile phone use and



cancer. Previous studies found no evidence that radiation from mobile phones is harmful, but those earlier studies looked at mobile phone use among fewer people over a shorter time.

The Swedish study is the largest and most comprehensive to date. Also, people in Sweden have been using mobile phones since 1984, longer than people in many other countries, so getting a large sample of people who have been using cellular telephones for a long time was relatively easy.

## **5.7 Space Technology for Improving Planetary Knowledge and Security**

Some of the most prominent discussions are as follows:

- Dissolving coral reef shells are explained by greater increases in CO<sub>2</sub> levels within oceanic waters. Especially vulnerable are cold sea corals and recently discovered planktonic organisms. Increases of CO<sub>2</sub> reduce pH leading to acidification. The panelists at the EGU Assembly suggested that 1/3 of all CO<sub>2</sub> is absorbed into oceans and that it has recently been discovered that CO<sub>2</sub> levels are beginning to affect deep ocean zones.
- Listening to raindrops through hydrophones at 2000 meters below water surface and photographing raindrops would further understand the rainfall process. This method shows that radar reflectivity and the underwater sound of rainfall can now be observed in deep seas; coupled with the use of satellites and radars, greater observations are likely to improve weather forecasts. A goal can be to observe precipitation from space over larger areas given longer periods of time, including helping in identifying hailstorms.
- The American and Japanese space agencies' (NASA & JAXA) dual Global Precipitation Measurement (GPM) Project will report three-hourly updates on rainfall activity. The 6 to 8 satellite project, equipped with a dual-frequency radar and passive microwave radiometer, will provide a consistent picture of global rainfall, of lower rain rates and a better idea of snowfall. The project is expected to run by 2011 and will enhance weather forecasting and increase knowledge about how the global water cycle affects climatic change. The GPM system will also be capable of receiving other space agencies' data, thus acting as a calibration reference for the whole satellite constellation.
- A new project 'Marine Mammal Exploration of the Oceans from Pole to Pole (MEOPP), in anticipation of the International Polar Year (2007), is expected to assess the use of polar animals for deep underwater (2000 meters) oceanographic data. Elephant seals are to be further harnessed with sensors and radios that can transmit information to satellites via scientists' laboratories after the seals' deep dives. The information can then be used by Coastguards, iceberg forecasting or used for ship routings in sea ice.
- Scientists have successfully tested a solar power robot capable of traversing throughout the Antarctic. This recently tested and efficient robot is similar to the NASA robotic probes sent to Mars. By studying the movements of the Antarctic probe, this will not only provide tremendous scientific insight into the polar region but will also help in making future space probes even more efficient when landing in soft terrain. Efforts are being explored into securing funding for five robots to further research of bacteria sampling or of mapping out

underneath mountains. A 2400 km expedition from the South Pole to Halley station is expected to get off the ground for the 2007 International Polar Year.

- A GRACE Mission (Gravity Recovery and Climate Experiment) observed ice mass loss in East Antarctica from satellite gravity measurements. This development comes as a surprise to EGU panelists who thought the region had a stable ice sheet and so a greater understanding on this process is required. The ice mass loss trend also reflects the greater than expected ice loss in southern Greenland and the West Antarctic as well as parts like the European Alps which can expect glaciers losses of up to three quarters within the next century.
- The GRACE Mission (Gravity Recovery and Climate Experiment) discovered through satellite altimetry pinpointed at the Amazon river that the volume of the ocean's waters is not constant due to seasonal changes. The use of satellite altimetry is measuring sea level change opens up the potential for further knowledge into oceanic environments. Satellite altimetry in conjunction with hydrography, modeling and gravity field results can provide great insights into sea level changes and enhancing the feasibility of weather forecasting.
- The first joint weather and climate forecast system (CLM/LM 4.0) is expected to provide precise regional climate change scenarios. This model system may have the potential to evaluate time scales from hours to centuries and from close proximity, thus furthering weather and climate forecasting.
- New results from a GPS network revealed that the 2004 Sumatra earthquake which triggered the Indian Ocean tsunami was actually caused by a series of two earthquakes. The first rupture occurred and was followed by a second one some thirty seconds later. Three months later, a third earthquake was triggered. The results of this were known by observing waves that were recorded by satellites at the time.
- The goal of the EGU symposium on Africa is to eventually open up several large interdisciplinary geo-science projects in African states, projects that would be linked with research councils. The goal is to build and increase capacity building and enhance the research potential for African universities, as well as to increase the involvement of African scholars in the topographical understanding of the African continent.

## **5.8 ANSI to Carry Out Survey on Needs for Nanotech Standards**

From: "ANSI-accredited TAG to ISO/TC 229-Nanotechnologies"

<ANSI\_accredited\_TAG\_to\_ISO/TC\_22@mail.vresp.com>

Reply-To: "ANSI-accredited TAG to ISO/TC 229-Nanotechnologies"

<reply-41b03bfcbl-acunu=igc.org@o.vresp.com>

To: acunu@igc.org

Subject: ANSI Survey on Nanotechnology Standardization Needs – Please respond by May 23, 2006

Date: Thu, 27 Apr 2006 19:33:28 +0000

In June 2005, the International Organization for Standardization (ISO) began a multi-year, multi-country project to develop standards applicable to nanotechnology. The ISO effort currently focuses on three main areas: 1) terminology and nomenclature, 2) metrology and instrumentation (including specifications for reference materials; test methodologies; modeling and simulation), and 3) science-based health, safety and environmental practices. Currently ANSI is surveying stakeholders to determine key standardization needs. Please click here <http://www.zoomerang.com/recipient/survey.zgi?p=WEB22598KQRAAD> to take the survey, or read on for more information.

The ANSI-accredited U.S. Technical Advisory Group (TAG) to ISO/TC 229-Nanotechnologies is responsible for formulating U.S.-based positions on work underway within the ISO committee. In an effort to gather information about standardization priorities that will aid in the commercialization of nanotechnology, the U.S. TAG has developed a survey on nanotechnology standardization needs. Results from this survey will assist the U.S. TAG in understanding the industry and in making recommendations to the ISO.

As the nanotechnology industry continues to grow and evolve, the development of related standards will impact your business; as a materially affected party, the U.S. TAG is requesting your assistance to help determine what standards should be developed. If you are interested in offering your organization's perspective with regards to nanotechnology standardization, please complete the following survey by Tuesday, May 23, 2006.

Industry Survey on Nanotechnology Standardization Needs  
<http://www.zoomerang.com/recipient/survey-intro.zgi?p=WEB22598KQRAAD>

Please note that the information provided in the survey will be used solely by the U.S. TAG and all answers will be held strictly confidential.

Thank you for your interest and participation. Please contact [HBenko@ansi.org](mailto:HBenko@ansi.org) if you have any questions.

American National Standards Institute  
25 West 43rd Street, 4th Floor  
New York, NY 10036